

# **Consideration of Land Use Planning as Part of the Reasonableness Criteria for Noise Barriers I-675, Greene County, Ohio**

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# Trying to avoid noise impacts . . .





... caused  
when  
residential  
developments  
are built near  
roads ...  
especially  
roads that  
eventually  
need to be  
widened.





# Topics

- ODOT noise analysis and abatement
- Need for and objectives of the Phase 1 study
- Noise-compatible land use planning and development
- Results of the Phase 1 study
- Current Phase 2 study
- Issues, considerations, future action and Phase 3 study



# Purposes of FHWA “Noise Standards” (23 CFR 772)

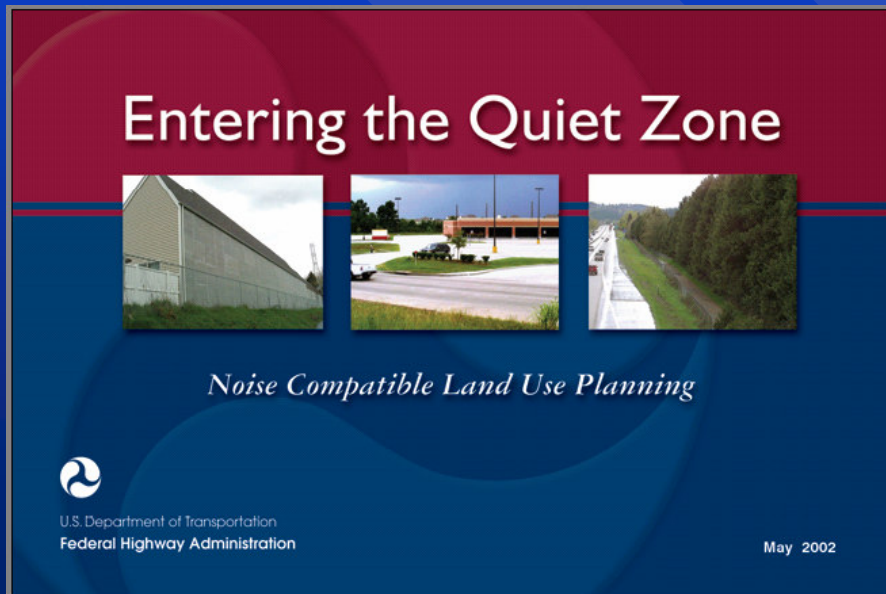
- Provide procedures for noise studies and noise abatement measures
- Supply noise abatement criteria
- **Establish requirements for information to be given to local officials related to highway project’s noise and its control**



# Information for Local Officials

## 23 CFR 772

- Future sound levels for developed and undeveloped lands near the project
- Information on protecting future land development from becoming incompatible





# Information for Local Officials

## 23 CFR 772

- Eligibility for Federal funds for Type II projects (“Retrofit” noise barriers)
  - Only if State DOT has a Type II program and then,
  - only if community pre-dates original highway construction, or
  - if project was planned prior to 1995 NHS Act



# Nationwide, there is a disconnect in the process for that information to ...

- ... reach the local agencies and then,
- ... be used to affect zoning and development approval decisions



## As a result...

- Developers build residential communities along highway without mitigation
- Buyers or renters move in without understanding impact of traffic noise on quality of life
- When ODOT goes to widen the highway, the development must be analyzed for noise impacts
- If impacted, abatement must be evaluated, and provided if feasible and reasonable





# ODOT's Goal: An Improved Process of Coordination with Local Officials

- FHWA has land use planning workshop scheduled for Ohio in August 2005 for MPOS's and local planners
- ODOT would work with local planning agencies to:
  - identify potential noise impact zones along its existing highways, and
  - educate and assist locals in preventing incompatible development
- Proactive approach, possibly in advance of project environmental studies



# Proactive Noise-Compatible Land Use Planning & Development

- Planning and zoning at the local level
- Noise-mitigated development



# Planning and Zoning: Avoid Incompatible Development Adjacent to Highway





# Noise-Mitigated Development: Site Layout with Buffer



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# Noise-Mitigated Development: Developer-Built Berm Near Road



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# Noise-Mitigated Development: Developer-Built Berm Near Road



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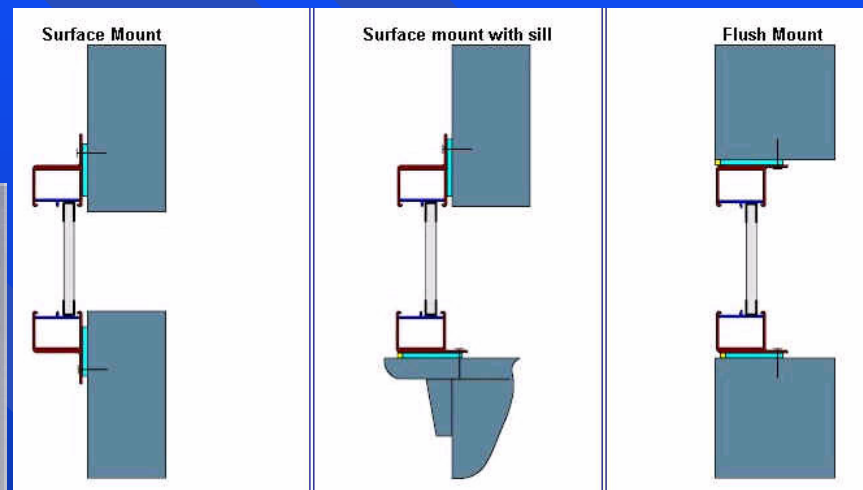
# Noise-Mitigated Development: Developer-Provided Noise Barrier



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# Noise-Mitigated Development: Sound-Insulated Windows



From [www.soundproofwindows.com](http://www.soundproofwindows.com)



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# Phase 1 Study Details



# Objectives of the Phase 1 Study

- Investigate technical aspects of a proactive approach by ODOT
- Develop future traffic sound level contours for several open parcels of land along I-675 in Greene County
- Present results to Miami Valley Regional Planning Commission (MVRPC)
- Assess the technical process used in the study



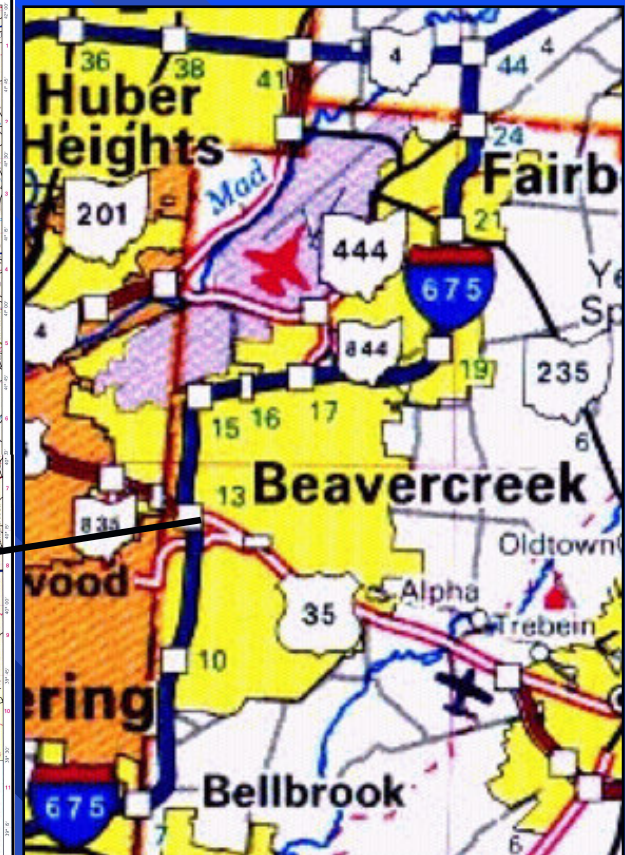
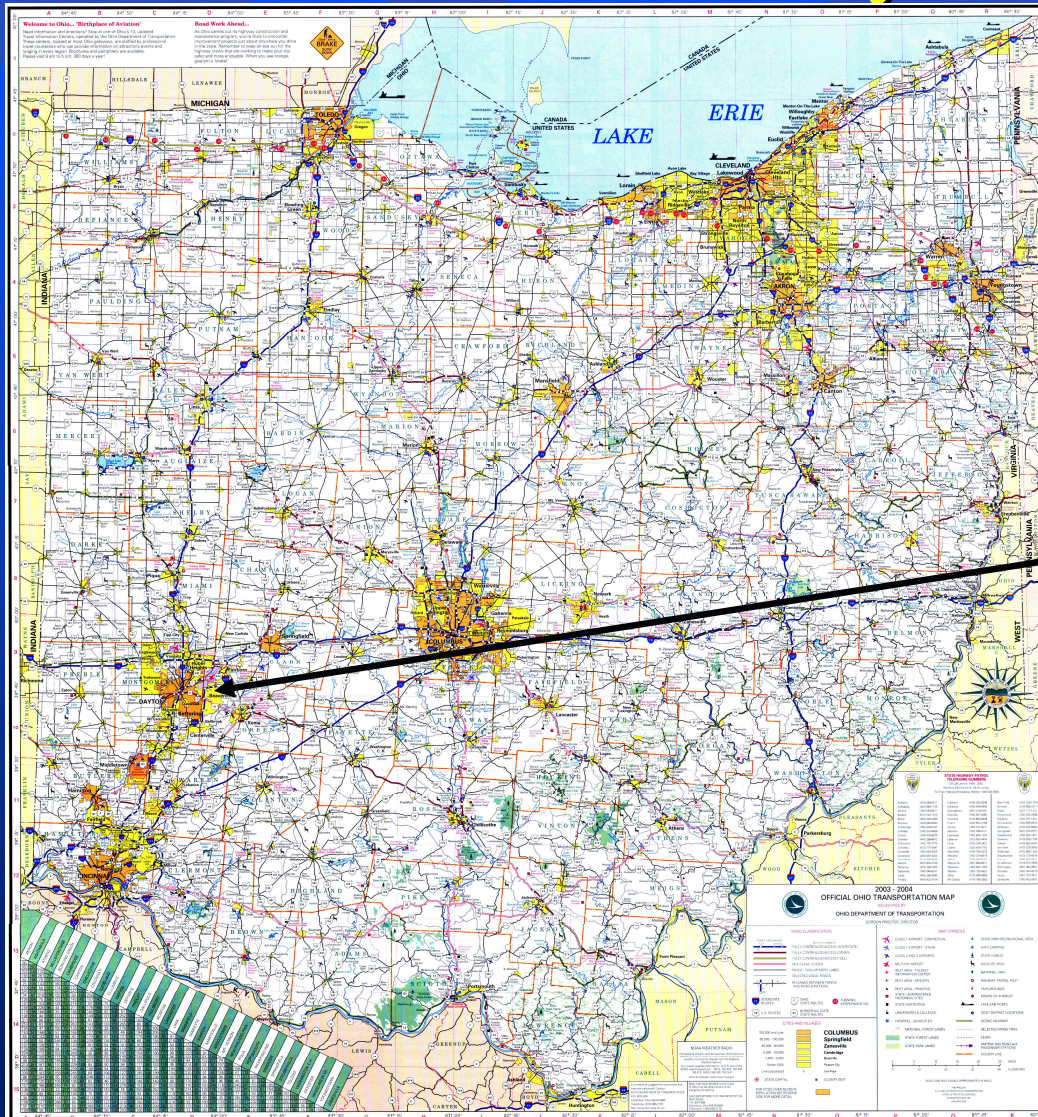
# Tasks

- Candidate parcel identification
- Field review with ODOT and site selection
- Noise measurements (50, 100, 200, 400, 600 ft)
- Site modeling (FHWA Traffic Noise Model 2.5)
- Model calibration
- Sound level contour development (existing 2004 and future 2025)
- Draft and final reports
- Briefing for MVRPC with ODOT





# General Project Location: I-675 Greene County



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# Site Selection

- Greene County GIS and aerial photos
  - Over 60 possible undeveloped parcels
- Field review:
  - Some already developed or under development
  - Some too rugged or wooded for noise measurements
  - Some were farm fields that would be planted
  - Some new sites identified: already developed, but as open park land or school fields







Ali Industries



Ankeny Middle School



Bath  
Township Park



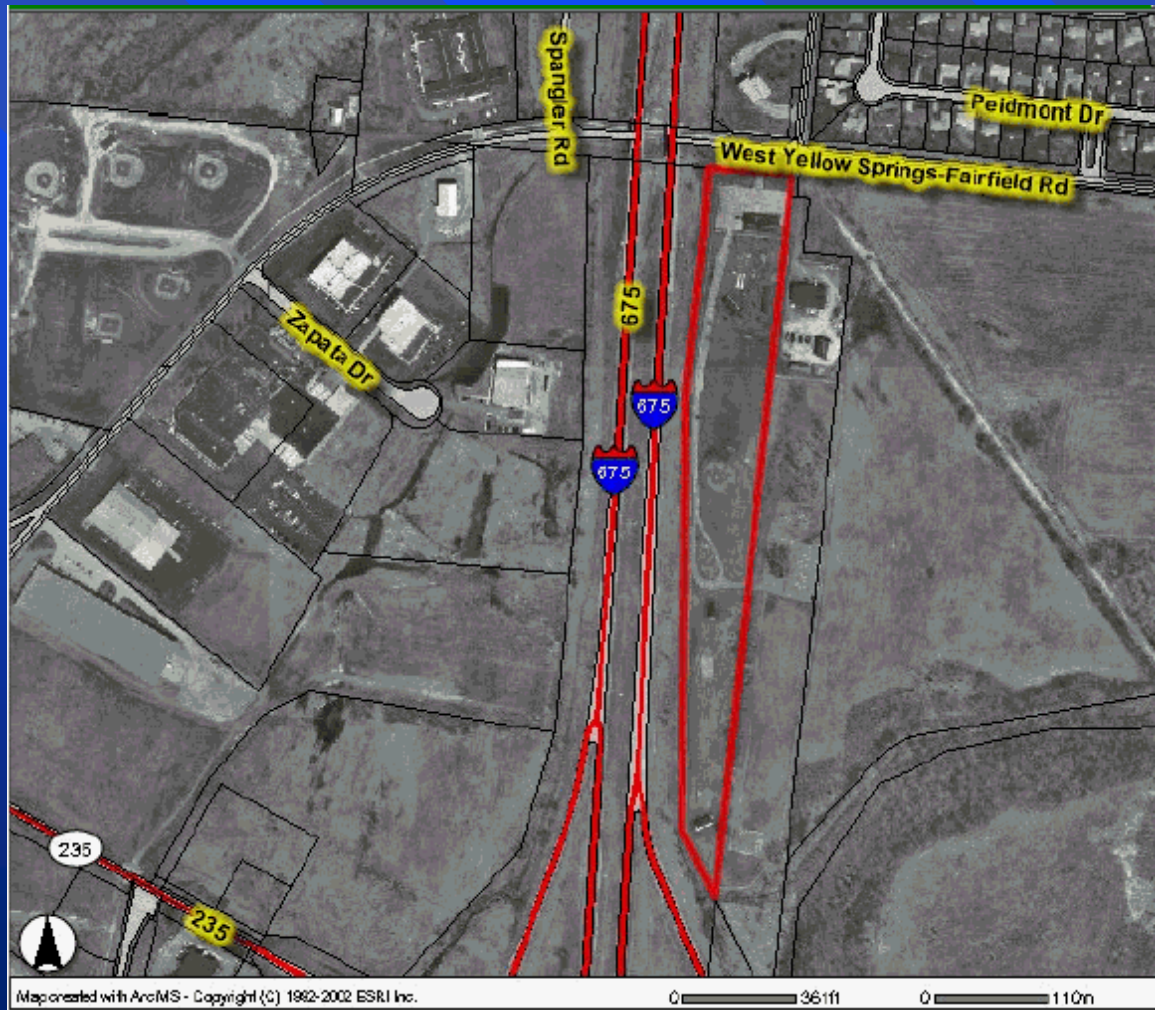
Fairborn High School



Fairborn Retention Basin



# Bath Township Park, South of West Yellow Springs- Fairfield Road



Slight fill,  
9 ft



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Bath Township Park  
Existing Traffic

100'



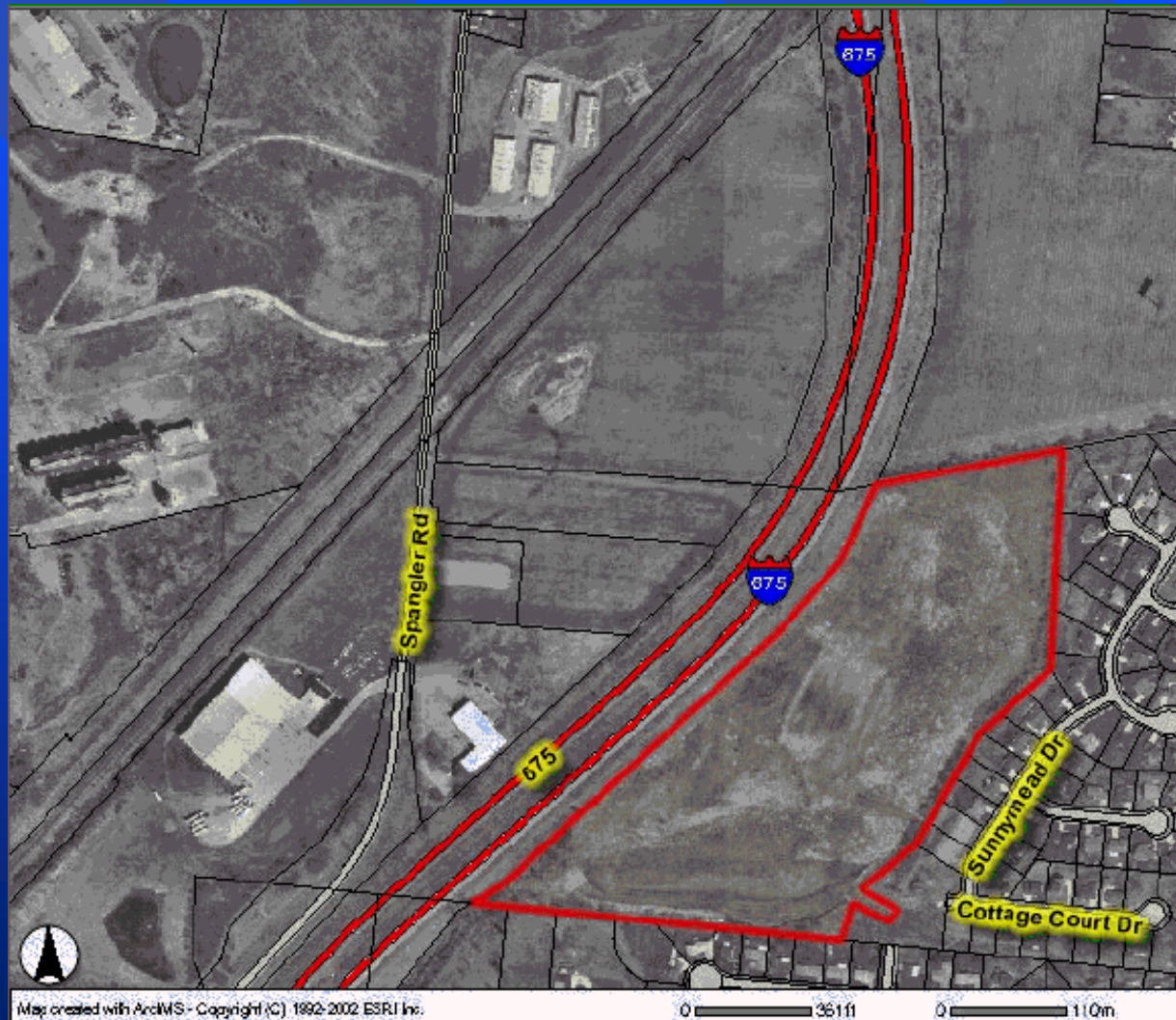




Bath Township Park  
Future Traffic



# City of Fairborn Retention Area, North of West Yellow Springs- Fairfield Road



Slight fill,  
8-15 ft (100  
to 400-ft  
away)



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# Distances (ft) to 66 dBA

<i>Site</i>	<i>Existing 2004</i>	<i>Future 2025</i>
Ankeney A	190-265	220-285
Ankeney B	165-260	190-285
Fairborn HS	180-155 (south) 255-315 (north)	240-300 (south) 335-475 (north)
Bath Park	<b>140-160</b>	<b>285-315 (south)</b> 315-370 (north)
Fairborn Retention	150-275 (south) <b>105-140 (north)</b>	<b>240-320 (south)</b> <b>285-385 (north)</b>
Ali Industries	125-220	235-305



# Concerns

- Wide range of impact distances for future noise levels:
  - Used same traffic data for all sites
  - Yet impact distances range between 190' and 475'
- Sound levels vary between sites:
  - Average Daily Traffic
  - Percent of trucks
  - Speed
  - Cross-section
  - Pavement type
- Sound levels vary within a site:
  - Terrain variation
  - Vegetative cover





# Concerns

- Model calibration of contours is difficult at best and misleading or wrong at worst
  - Meteorological effects on measured levels
  - Small shifts in levels can have large effects on impact distance
  - Calibration varies by distance from road
  - Cannot always model the real world



# Considerations

- Likely need to evaluate each undeveloped site individually to set any restrictive zone
- Better to have a relatively simple method to determine distance within which an agency should *consider* noise, rather than distances within which incompatible development should be prohibited



# Objectives of the Phase 2 Study

- Present findings of Phase 1 to local officials
- Determine local interest in noise compatible planning
- Determine potential changes to ODOT noise policy



# Next Steps: Phase 3

## ■ ODOT:

- Look at feasibility of simple distance “warning” method
- Consider best time in planning/project development process to interject noise considerations
- Embark on educational effort for MPOs and local planners
- Consider technical assistance role and needed resources
- Consider noise policy change regarding future new development along its highways





## Next Steps: Phase 3

- Upcoming FHWA Land Use Planning Seminar (Columbus, Ohio August 22, 2005)
- Legislative mandate to explore alternative abatement measures



# Questions?

